REMARKS

Entry of the foregoing, re-examination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.114 and in light of the remarks which follow, are respectfully requested.

By the above amendments, claims 1-21 have been canceled. New claims 22-39 have been introduced which are directed to further aspects of the present invention. Support for new claim 22 can be found in the specification at least at page 2, lines 14-18, taken in connection with page 1, lines 6 and 7; page 4, line 18 to page 5, line 26; and page 7, lines 19-23. Support for new claims 23-39 can be found at least in the originally filed claims 2-13. Entry of the foregoing amendments is proper at least because a Request for Continued Examination is being filed herewith. See 37 C.F.R. §1.114.

Turning to the Official Action, claims 1-21 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 3,658,810 (*Tanaka et al*), International Publication No. WO 98/37063 (*WO '063*), or International Publication No. WO 96/22974 (*WO '974*). This rejection is moot in light of the cancellation of claims 1-21, and the addition of new claims 22-39. Moreover, the applied art does not disclose or suggest each feature of aspects of the present invention defined in claims 22-39 for at least the following reasons.

According to one aspect of the present invention as defined by claim 1, a process is provided for producing a lactam by a reaction between water vapor and an aminonitrile in vapor phase and in presence of a catalyst. The process comprises providing water in vapor phase, and vaporizing the aminonitrile by feeding the aminonitrile in liquid phase to be in contact with the water vapor, before contacting the resulting mixture with the catalyst.

Tanaka et al relates to a process for the preparation of ϵ-caprolactam by contacting continuously with steam ϵ-aminocaproic acid, ϵ-aminocaproamide or a mixture of the two (*Tanaka et al* at col. 1, lines 14-16).

Tanaka et al does not disclose or suggest each feature of the present invention. For example, *Tanaka et al* does not disclose or suggest a process for producing a lactam by a reaction between water vapor and an aminonitrile in vapor phase, as recited in claim 22. Rather, *Tanaka et al* discloses feeding ϵ-aminocaproic acid, ϵ-aminocaproamide or a mixture thereof into a reaction system either in an isolated form or as a solution in water or other aqueous solution (*Tanaka et al* from col. 2, line 68 to col. 3, line 10). Clearly, there is no mention or suggestion that the ϵ-aminocaproic acid, ϵ-aminocaproamide or mixture thereof is reacted while in vapor phase. Moreover, at page 4 of the Official Action, the Patent Office has acknowledged that *Tanaka et al* discloses a reaction between "a liquid material and steam."

Furthermore, *Tanaka et al* fails to disclose or suggest vaporizing the aminonitrile by feeding the aminonitrile in liquid phase to be in contact with water vapor, before contacting the resulting mixture with a catalyst. By comparison, *Tanaka et al* discloses that a catalyst is present in the reaction zone into which the steam and the ϵ-aminocaproic acid, ϵ-aminocaproamide or a mixture thereof in liquid phase are fed (*Tanaka et al* at col. 6, lines 35-37). That is, it appears that in the *Tanaka et al* system, the reactants and the catalyst contact each other simultaneously in the reaction zone. There is simply no disclosure or suggestion of feeding the aminonitrile in liquid phase to be in contact with the water vapor before contacting the resulting mixture with the catalyst.

Accordingly, for at least the above reasons, it is apparent that *Tanaka et al* does not render obvious the presently claimed invention.

WO '063 discloses a process which includes (1) contacting 6-aminocapronitrile with water under hydrolysis conditions, (2) separating water and ammonia, which is formed in the hydrolysis reaction, and (3) contacting the resulting mixture with superheated steam (*WO '063* at page 5, lines 7-12).

WO '063 fails to disclose or suggest each feature of the present invention. For example, *WO '063* does not disclose or suggest vaporizing an aminonitrile by feeding the aminonitrile in liquid phase to be in contact with water vapor, before contacting the resulting mixture with a catalyst, as recited in claim 22. In this regard, *WO '063* appears to disclose that a hydrolysis reaction can be performed in the presence of a catalyst (*WO '063* from page 5, line 31, to page 6, line 11). However, there is simply no disclosure or suggestion of vaporizing an aminonitrile by feeding the aminonitrile in liquid phase to be in contact with water vapor, before contacting the resulting mixture with a catalyst.

Moreover, *WO '063* unequivocally discloses that the process thereof "is carried out in the absence of a catalyst" (*WO '063* at page 2, lines 5-8 and from page 2, line 36 to page 3, line 10). Although this disclosure of *WO '063* appears to contradict *WO '063*'s disclosure of using a catalyst in the hydrolysis reaction discussed above, *WO '063* nevertheless discloses various disadvantages of employing a catalyst in the process thereof (*WO '063* at page 1, lines 26-36). In light of such disadvantages disclosed by *WO '063*, it is apparent that *WO '063* teaches away from the claimed process in which a resulting mixture is contacted with a catalyst.

Accordingly, for at least the above reasons, it is apparent that *WO '063* does not render obvious the presently claimed invention.

WO '974 relates to preparing lactam by means of a vapor phase reaction between an aliphatic aminonitrile and water in the presence of a solid catalyst.

WO '974 does not disclose or suggest each feature of presently claimed invention. For example, *WO '974* fails to disclose or suggest vaporizing an aminonitrile by feeding the aminonitrile in liquid phase to be in contact with water vapor, before contacting the resulting mixture with a catalyst, as recited in claim 22. By comparison, *WO '974* discloses a method for preparing lactam by means of a vapor phase reaction between an aliphatic aminonitrile and water in the presence of a solid catalyst. There is no disclosure or suggestion of vaporizing an aminonitrile by feeding the aminonitrile in liquid phase to be in contact with water vapor, before contacting the resulting mixture with a catalyst, as is recited in claim 22.

For at least the reasons set forth above, no *prima facie* case of obviousness exists with respect to new claims 22-39. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: Roger H. Lee

Roger H. Lee
Registration No. 46,317

P.O. Box 1404
Alexandria, VA 22313-1404
(703) 836-6620

Date: December 4, 2002